Options for ABB drives

User's manual
ACS-AP-x Assistant control panels

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List of related manuals in English

Tool and maintenance manuals	Code (English)
Drive composer Start-up and maintenance PC tool User's manual	*3AUA0000094606*
Option manuals	
DPMP-01 mounting platform for ACS-AP control panel	*3AUA0000100140*
DPMP-02 mounting platform for ACS-AP control panel	*3AUA0000136205*

You can find manuals and other product documents in PDF format on the Internet. See section *Document library on the Internet* on the inside of the back cover. For manuals not available in the Document library, contact your local ABB representative.

User’s manual

ACS-AP-x Assistant control panels

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1

Introduction to the manual

What this chapter contains

The chapter describes the applicability, compatibility, intended audience and the contents of this manual.

Applicability

This manual is applicable with ACS-AP-I, ACS-AP-S control panels with hardware revision C and software version 4.61 or later and with ACS-AP-W control panel with hardware revision A. The control panel types are referred as ACS-AP-x in this manual.

The images and instructions are based on the use of the control panel with an ACS880 and ACS580 drives. If you use the control panel with another equipment or program, note that some details may differ from what is presented here.

Compatibility

See the appropriate drive manual for the compatible panel.

Safety

Follow all safety instructions delivered with the drive.

Intended audience

This manual is intended for persons who use an ACS-AP-x Assistant control panel.

Contents of the manual

The information in the manual is organized in the following chapters:

- *Installation and start-up* describes the installation and start-up of the control panel.
- *Control panel overview* describes the main parts of the control panel and their functions.
- *Basic operation* describes the menu structure, views and basic functions of the control panel.
- *Functions in the main Menu* describes the functions in the main **Menu**.
- *Functions in the Options menu* describes the functions in the **Options** menu.
- *Control of multiple drives* describes how to control several drives with one control panel.
- *Fault tracing* describes how to identify different fault and warning messages and how to solve problem situations.
- *Service and maintenance* describes service-related functions and routine maintenance tasks.
- *Panel-to-PC USB connection* describes interaction between a PC and the control panel.
- *Technical data* describes the parts, dimensions and materials of the control panel, and other technical data about the control panel.

2

Installation and start-up

What this chapter contains

The chapter describes how to install and start-up the Assistant control panel for the first time.

Installation

Attach the control panel directly to the drive or use a separate mounting kit (for example, for cabinet door mounting).

To attach the control panel,

1. place its bottom end into the bottom of the slot in the drive (A),
2. pivot the control panel and push the upper part (B) until you hear a click.

To detach the control panel,

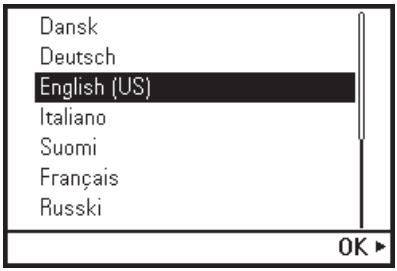
1. release the control panel by pressing the clip (B),
2. pull the upper end of the control panel out of the slot in the drive.

First start-up

To start-up the control panel for the first time, follow the instructions:

1. Make sure that all drive-specific safety precautions have been taken into account.
2. Install the control panel as instructed in *Installation* (page *19*).
3. Power up the drive.

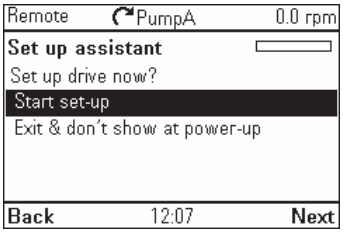
   The control panel start-up begins automatically. Wait until the control panel shows the language selection view.

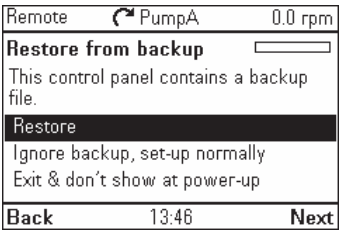


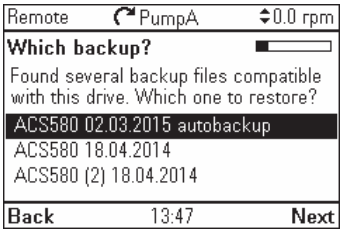
4. Use ▲ or ▼ to select a language.
5. Press ⏎ to confirm your selection.

   Wait until the control panel completes uploading the language file. Its progress is indicated by a progress bar.

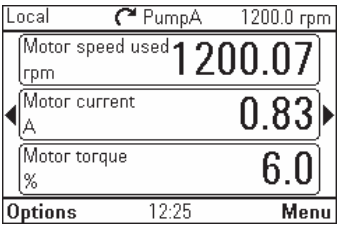
If there is a Basic set-up assistant in the drive, or if the control panel already contains a compatible backup (or backups) that could be copied to the drive, the control panel prompts a question.







Once you are in the **Home** view, the control panel is ready for use.



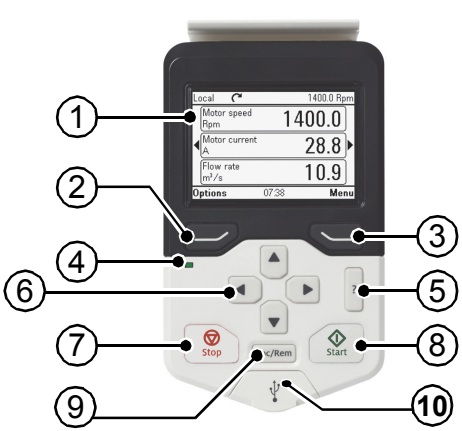
3

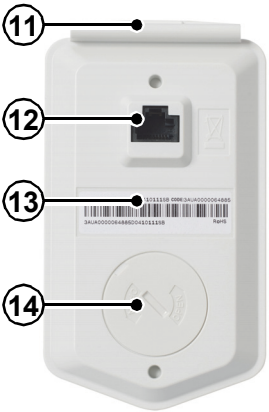
Control panel overview

What this chapter contains

The chapter describes the display, keys and main parts of the Assistant control panel.

Display, keys and parts



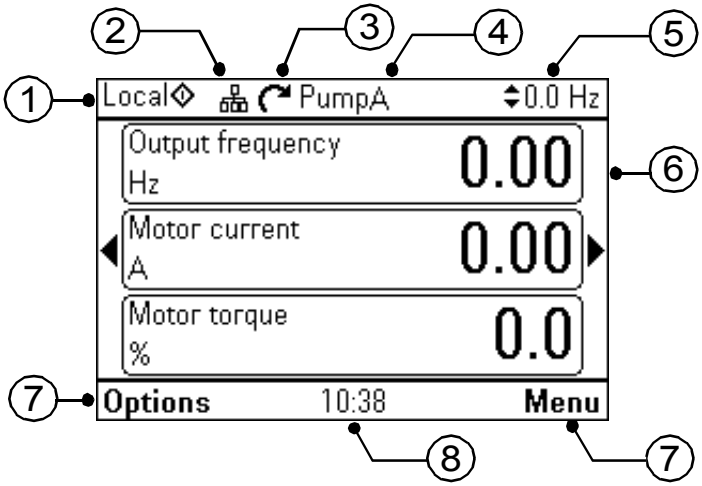


1	*Display*
2	*Left softkey*
3	*Right softkey*
4	*Status LED*
5	*Help*
6	*The arrow keys*
7	Stop (see *Start and Stop*)

8	Start (see *Start and Stop*)
9	Local/Remote (see *Loc/Rem*)
10	*USB connector*
11	Clip
12	*RJ-45 connector*
13	*Type code label*
14	*Battery cover*

Display

In most views, the following control panel elements are shown on the display:



1. **Control location and related icons**: Indicates how the drive is controlled:
   - **No text**: The drive is in local control, but controlled from another device. The icons in the top pane indicate which actions are allowed.
   - **Local**: The drive is in local control, that is, controlled from the control panel.
   - **Remote**: The drive is in remote control, that is, controlled through I/O or fieldbus.
2. **Panel bus**: Indicates that there are more than one drive connected to this panel.To switch to another drive, go to **Options** -> **Select drive**.
3. **Status icon**: Indicates the status of the drive and the motor. The direction of the arrow indicates forward (clockwise) or reverse (counter-clockwise) rotation.

Status icon	Animation	Drive status
	-	Stopped
	-	Stopped, start inhibited
	Blinking	Stopped, start command given but start inhibited
	Blinking	Faulted
	Blinking	Running, at reference, but the reference value is 0
	Rotating	Running, not at reference
	Rotating	Running, at reference

Note: For non-rotating driven equipment, the numbers 1 and 0 are used to indicate that the drive is running or stopped, respectively.

4. **Drive name**: If a name has been given, it is displayed at the top pane. By default, it is blank. You can change the name in the *Primary settings* (page *49*) or *Settings* menu (page *48*).
5. **Reference value**: Speed, frequency and so on, are shown with its unit. For information on changing the reference value, see *Setting the reference* (page *52*).
6. **Content area**: Displays the actual content of the view in this area. The content varies from view to view. The example view above is the main view of the control panel which is called the Home view.
7. **Softkey selections**: Displays the functions of the softkeys (and) in a given context.
8. **Clock**: Displays the current time. The time can be changed through the *Primary settings* (page *49*) or *Settings* menu (page *48*).

You can adjust the display contrast and back light functionality in the *Primary settings* (page *49*) or *Settings* menu (page *48*).

Keys

The keys of the control panel are described below.

Left softkey

The left softkey ( ) is usually used for exiting and canceling. Its function in a given situation is shown by the softkey selection in the bottom left corner of the display.

Holding down exits each view in turn until you are back in the Home view. This function does not work in special screens.

Right softkey

The right softkey ( ) is usually used for selecting, accepting and confirming. The function of the right softkey in a given situation is shown by the softkey selection in the bottom right corner of the display.

The arrow keys

The up and down arrow keys (and) are used to highlight selections in menus and selection lists, to scroll up and down on text pages, and to adjust values when, for example, setting the time, entering a passcode or changing a parameter value.

The left and right arrow keys (and) are used to move the cursor left and right in parameter editing and to move forward and backward in assistants. In menus, and function the same way as and , respectively.

Help

The help key (?) opens a help page. The help page is context-sensitive, in other words, the content of the page is relevant to the menu or view in question. See *Help* (page *32*) for more information on the help page.

Start and Stop

In local control, the start key ( ) and the stop key ( ) start and stop the drive, respectively.

Loc/Rem

The location key (Loc/Rem) is used to switch the control between the control panel (Local) and remote connections (Remote). When switching from Remote to Local while the drive is running, the drive keeps running at the same speed. When switching from Local to Remote, the status of the remote location is adopted. See the drive-specific firmware manual for more details.

Key shortcuts

The table below lists key shortcuts and combinations. Simultaneous key presses are indicated by the plus sign (+).

Shortcut	Available in	Effect
+ +	any view	Save a screenshot. Up to fifteen images can be stored in the control panel memory. For instructions on how to transfer the images into a PC, see section *Transferring files between the control panel and a PC* (page *68*).
+ , +	any view	Adjust backlight brightness.
+ , +	any view	Adjust display contrast.
or	Home view	Adjust reference.
+	parameter edit views	Revert an editable parameter to its default value.
+	any view	Show/hide parameter index and parameter group numbers.
(keep down)	any view	Return to Home view by pressing down the key until Home view is shown.

Status LED

The control panel has a status LED that indicates if there are any faults or warnings present. The table below shows the meaning of the LED indications.

Green, continuous		The drive is functioning normally.
Green, flickering		Data is transferred between the PC tool and drive through the USB connection of the control panel.
Green, blinking		There is an active warning in the drive.
Red, continuous		There is an active fault in the drive.
Blue, blinking		Bluetooth interface is enabled.It is in discoverable mode and ready for pairing.
Blue, flickering		Data is transfered through the Bluetooth interface of the control panel.

For further information on fault and warning indications, see *Identifying error and warning messages* (page *59*).

USB connector

The USB connector is used for connecting the control panel to a PC. When connected, the control panel acts as an USB adapter for data transfer between the PC tool and the drive. It is also possible to transfer data between the PC and the control panel through the USB connection.

RJ-45 connector

The RJ-45 connector is used to electrically connect the control panel to the drive. Mechanical connection is achieved with the clip on the top.

Type code label

The type code label contains revision information. The revision letter and the software version of the control panel are highlighted in the image below.

Battery cover

Underneath the battery cover there is a compartment for the battery that powers the real-time clock of the control panel.

4

Basic operation

What this chapter contains

The chapter describes the basic operations and components of the user interface, lists common user tasks and provides instructions to complete the task.

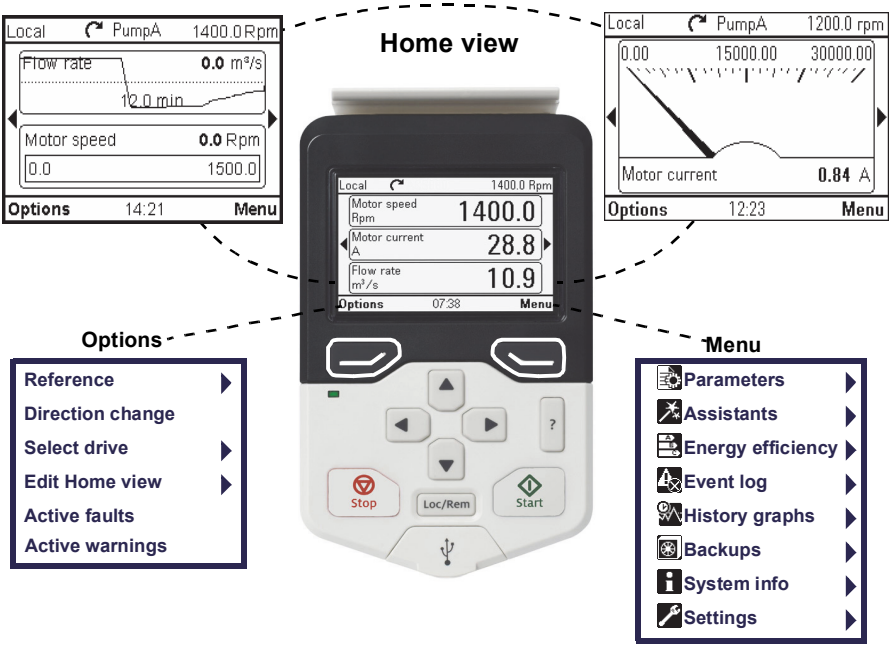
User interface overview

The user interface has the following main components:

- **Home view**: Used to monitor signals. See *Home view* (page *22*).
- **Menu:** Access most functions of the control panel. The **Menu** functions are described in detail in chapter *Functions in the main Menu* (page *31*).
- **Options:** Used to set a reference, change the motor direction, select the drive, edit Home view pages, and see the fault and warning status. The **Options** menu is described in detail in chapter *Functions in the Options menu* (page *27*).
- **Help:** Provides information on the current view or menu or on possible problems associated with it. See *Help* (page *22*).
- **Faults and warnings:** View faults and warnings when the drive or control panel experiences an error. See *Fault tracing* (page *59*).

Control panel navigation

Use the arrow keys and softkeys for navigation. Follow the choices on the screen.



Note: The Menu varies based on the drive/device to which the panel is connected, and the menu shown is an example of ACS880 drive.

Navigation memory

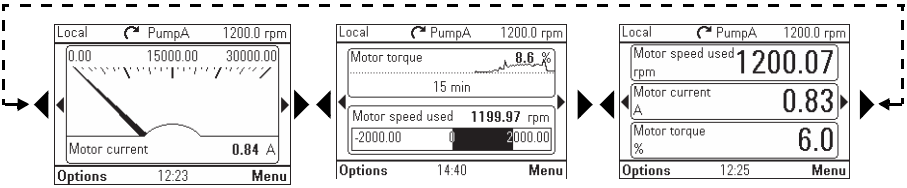
The Assistant control panel has a navigation memory that allows you to backtrack your steps through the user interface with the arrow keys ◄ and ►. The path you have last accessed remains in the memory for 10 minutes.

- The left arrow key (◄) moves you backwards in the menu structure. If you press ◄ repeatedly, you return back to the Home view.
- The right arrow key (►) moves you forward in the menu structure. If you press ► repeatedly, you move forward along the path in the menu structure you had previously accessed.

Home view

The main view of the control panel is called the **Home** view. In the **Home** view, you can monitor the status of the drive, such as its speed, torque or power. The **Home** view has one or more pages, each of which can display up to three signals.

The number of pages and the signals shown on each page are customizable, and the Home view configuration is saved to the drive whenever you change it. The maximum total number of signals displayed varies from 9 to 21, depending on the drive. In the example below, three Home view pages are used, showing different display formats.



Each application macro and user set has a default Home view configuration. When you select an application macro or restore a user set, the Home view configuration changes accordingly. There is a default Home view configuration in each drive, which can be restored in the *Primary settings* (page *49*) or *Settings* (page *48*) menu.

Note: The Menu varies based on the drive/device to which the panel is connected.

The **Home** view opens automatically when you power up the drive. The **Home** view is also displayed from the **Options** menu or the main **Menu** if no key is pressed for 10 minutes.

Tip: You can return to the **Home** view from any view except special screens by holding down the left softkey .

Navigating in the Home view

- Use ◄ and ► to move between the different pages of the **Home** view. The page numbers are shown while you scroll between pages.
- Use ▲ or ▼ to adjust the reference (visible in the top right corner). See also *Setting the reference* (page *27)*.
- Press (**Menu**) to open the main **Menu** (see *Functions in the main Menu* on page *31*).
- Press (**Options**) to open the **Options** menu (see *Functions in the Options menu* on page *27*).

Help

You can open a context-sensitive help page in all menus and views by pressing ?. The help page provides information on the use of the current view or menu, or on possible problems associated with it.

On the help page, you can:

- press ? again or (**Exit**) to exit.

Common user tasks

The following tables list common user tasks and describes how to complete the task. See chapters *Functions in the main Menu* (page *37*) and *Functions in the Options menu* (page *51*) for detailed descriptions of functions in the menus.

Note: The Menu options varies based on the drive/device to which the control panel is connected.

Basic operation of the drive

Task	*Actions*
Start and stop the drive.	In local control, press to start the drive and to stop the drive.
Set the reference (for example, speed) in the **Home** view.	In local control, go to **Options > Reference**. Set the reference with the arrow keys. For detailed instructions, see *Setting the reference* (page *52*).
Switch between local and remote control.	Press .
Change the direction of motor rotation.	In local control, go to **Home** view, press (**Options**) to open the **Options** menu and select **Direction change**.

Parameters

Task	*Actions*
Choose parameters displayed on the Favorites list.	Go to **Menu > Parameters > Favorites > Edit**. See also *Editing the list of favorites* (page *39*).
View/edit parameters.	Go to **Menu > Parameters > Complete list** to view parameters. See *Editing parameters* (page *41*) for instructions on editing parameters.
Add parameters to the Home view.	See *Editing the contents of the Home view* (page *52*).
Show/hide parameter index and group numbers.	Press + .
Restore parameter default value.	In the editing mode, press + . To save the default value, press (**Save**).
View parameters that differ from Application Macro defaults.	Go to **Menu > Parameters > Modified**.

System information and help

Task	*Actions*
How to get help.	Press [?] to open the context-sensitive help.
To view drive information.	Go to **Menu > System info > Drive**.
To view control panel version.	Go to **Menu > System info > Control panel**.
To view application program license.	Go to **Menu > System info > Licenses**.
To view Product application information.	Go to **Menu > System info > Product application**.

Faults and warnings

See *Fault tracing (page 59)* for detailed information on faults and warnings.

Task	*Actions*
Hide/view an active fault.	Faults are automatically displayed. If you hide a fault by pressing (**Hide**), it automatically reappears after 60 seconds of no key presses. You can also view the fault through **Options > Active faults**.
Open help page on a fault.	Press [?] to view the help page.
Reset an active fault.	Press (**Reset**) to reset an active fault.
View tripping faults.	Go to **Menu > Event log > Faults**.
Hide/view an active warning.	Warnings are automatically displayed. If you hide a warning by pressing (**Hide**), it automatically reappears if the warning is still active after 60 seconds of no key presses.
Open help page on a warning.	Press (**How to fix**) or [?] to view the help page.
Reset an active warning.	Warnings disappear automatically once the condition that has triggered it goes away.
View past warnings and faults.	Go to **Menu > Event log > Other events**.

Basic settings and assistants

Task	*Actions*
Adjust backlight brightness.	Press + [▲] or [▼].
Adjust display contrast.	Press + [▲] or [▼].
Change language.	Go to **Menu > Settings > Language**.
Change time and date, and related settings.	Go to **Menu > Settings > Date & time**.
Launch an assistant.	Go to **Menu > Assistants** and select an assistant to launch.

Backups

Task	***Actions***
Create a backup.	See *Creating a parameter backup* (page *47*).
Restore a backup.	See *Restoring a parameter backup* (page *47*).

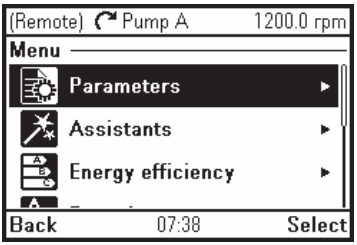
5

Functions in the main Menu

What this chapter contains

The chapter describes the functions in the main **Menu**.

Menu



All functions of the control panel are accessed through the **Menu** which is the main menu of the user interface. The sub-menus of the **Menu** are listed below and they are described in more detail in the subsequent sections. The sub-menus depend on the product that is controlled with the control panel.

The following sub-menus varies based on the drive/device to which the panel is connected:

- *Parameters* (page *39*)**:** View and edit parameters.
- *Assistants* (page *39*): Launch an assistant.
- *Energy efficiency* (page *45*): Use energy-saving features.
- *Event log* (page *45*): View information on faults and warnings.
  See also *Fault tracing* (page *59*).
- *History graphs* (page *46*): View the load profile.
- *Backups* (page *46*): Save settings in the control panel memory and restore them to the drive.
- *System info* (page *48*): View information on the drive and options.
- *Settings* (page *48*): View and change time and date settings, language, display and other settings, and edit texts.

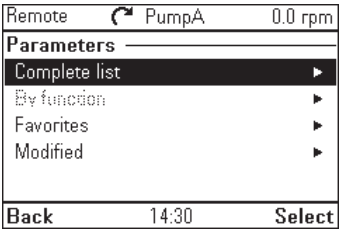
- *Primary settings* (page *49*): View and change settings related to motor, PID, fieldbus, advanced functions, clock, region, and display.
- *I/O* (page *50*): Provides terminal name, number, electrical status and logical meaning of the drive.
- *Diagnostics* (page *50*): Provides faults and warnings and helps to resolve potential problems.

Navigating in the Menu

- Use ▲ or ▼ to select a menu item.
- Use ◄ or — (**Exit**) to go back to the **Home** view.
- Use ► or ⌐ (**Select**) to enter the selected sub-menu.

Parameters

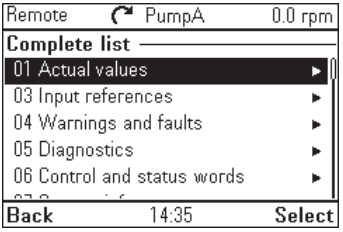
In the **Parameters** menu, you can view and edit parameters. There are four sub-menus through which you can access the parameters. In each sub-menu, the grouping principle of the parameters is different.



In each sub-menu, you can edit a parameter by highlighting it and pressing (**Edit**). Counter parameters and certain number, text and bit field parameters are read-only and can be viewed by pressing (**View**).

Complete list

In the **Complete list** sub-menu, all parameter groups are listed in numerical order. If you select a parameter group, all parameters in that group are listed and you can view and edit the parameters. Parameter numbers are always displayed in this sub-menu.

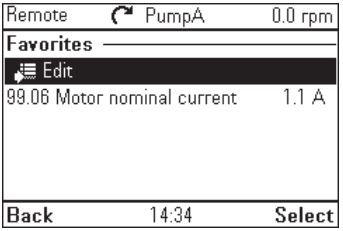


By function

This functionality is available in a future release.

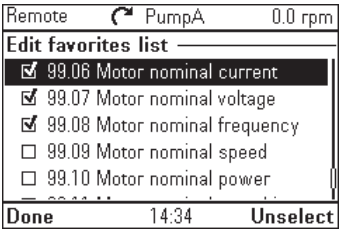
Favorites

In the **Favorites** sub-menu, only user-selected parameters are listed. The order is determined by the parameter number.



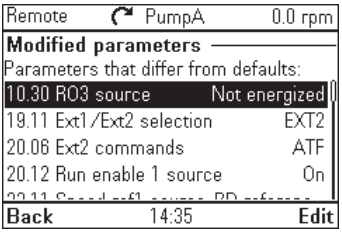
Editing the list of favorites

1. Select **Edit**.
2. Check parameters you want to show on the list by pressing (**Select**).
3. Press (**Done**) to exit and save changes.



Modified

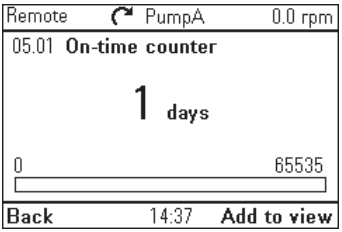
In the **Modified** sub-menu, only the parameters whose values differ from the Application Macro defaults are listed. The order is determined by the parameter number.



Adding parameters to the Home view

When you view a read-only parameter in the **Parameters** menu, you can add the parameter to the **Home** view.

- Press (**Add to view**) to open the Home view in the editing mode then you can add the parameter to an empty display slot or replace an existing parameter with it.
- Press (**Back**) to go back to the parameter view.



Editing the **Home** view functions are described in more detail in *Editing the contents of the Home view* (page 52).

Editing parameters

You can edit parameter values with the arrow keys.

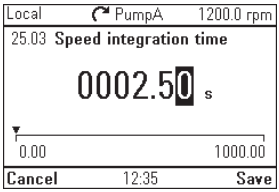
1. Press (**Select**) to select the desired parameter from the list.
2. Press (**Edit**).
3. Use and to change the value.
4. Press (**Save**) to save the value, or press (**Cancel**) to exit the parameter view and discard any changes.
5. Press + to restore the default value of the parameter (this does not save it).

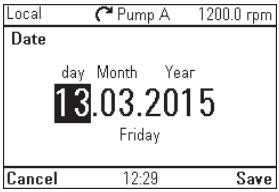
See the sections below for more information on editing specific parameter types.

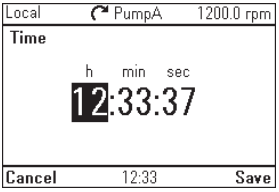
Editing numeric parameters

Numeric parameters include parameters with linear numeric values, passcodes, time and date parameters, durations and exception dates. For numeric parameters with linear values, the minimum and maximum values are displayed in the bottom left and right corners of the content area, respectively.

- Use ◄ and ► to highlight digits.
- Use ▲ and ▼ to change the value.
- Press ⌐ (**Save**) to save the value and exit the view.
- To cancel and exit, press ⌐ (**Cancel**).



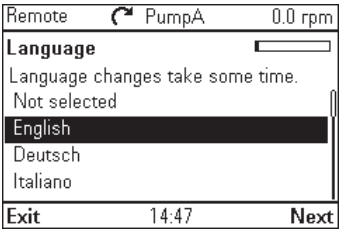




Editing selection list parameters

A selection list consists of mutually exclusive options, such as the language selection list.

- Use ▲ and ▼ to move the cursor.
- Press ⌐ (**Save**) to select and save the highlighted option.
- To cancel and exit, press ⌐ (**Cancel**).

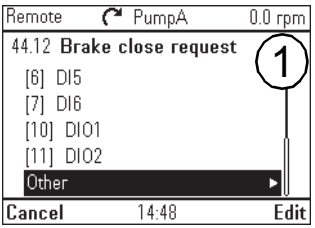


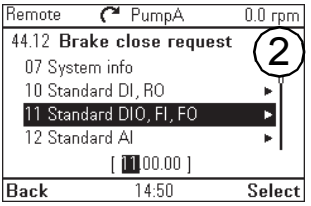
Some selection list parameters allow you to choose another parameter as its value. In addition to a preset list of options, you may be able to select a parameter freely, represented by the selection **Other** in the list.

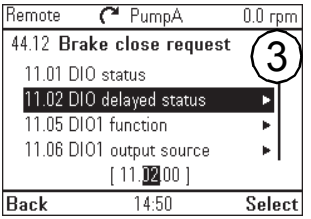
To select a parameter, follow the instructions:

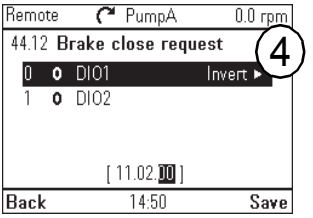
1. Select **Other** to move to a list of parameter groups.
2. Select a parameter group to move to a list of parameters.
3. Depending on the parameter you are editing, you must select a parameter or an individual bit, or you may choose either of the two.
   - If the right softkey label is **Select**, you must select an individual bit as the value of the parameter you are editing. Press (**Select**) to move to a bit selection list.
   - If the right softkey label is **Save**, you can select that parameter as the value of the parameter you are editing. Press (**Save**) to save the selection.
   - If the right softkey label is **Save** and there is also an arrow on the right hand side of the selection, you can choose an individual bit or all the bits in that parameter. Press to move to a bit selection list. If you want select all the bits in the parameter, press (**Save**) instead.
4. Select a bit if applicable (see the previous step). Press to invert the selected bit and press (**Save**) to save the selection.

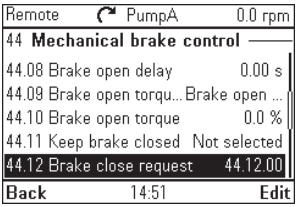
The parameter or bit is now selected as the parameter value.



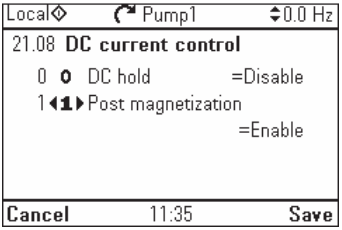








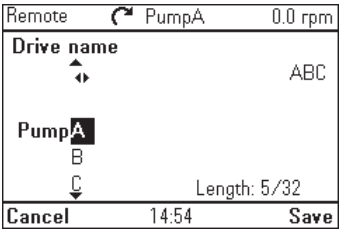
Editing bit-field parameters



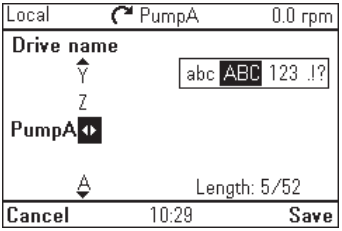
A bit-field parameter is a bit word whose individual bits can be edited. The labels describe the function of each bit, and the current state of the bit is shown as 1 or 0.

- Use ▲ and ▼ to select a bit.
- To change a bit value, press ◀ or ▶.
- To save the bit values and exit, press (**Save**).
- To cancel and exit, press (**Cancel**).

Editing texts



Texts that you can edit with the control panel include parameter display names in the Home view and their units, drive names, fault and warning names, and other customizable notes or names.



- To select the character mode (lower case / upper case / numbers / special characters), press ▲ until symbol ◆ is highlighted and then select the mode with ◀ and ▶. Now you can start adding characters. The mode remains selected until you select another one.
- To add a character, highlight it with ▲ ▼ and then press ▶.
- To remove a letter, press ◀.
- Press (Save) to accept the new setting, or press (Cancel) to go back to the previous view without making changes.

Note! In the current software version, only the English character set (a...z) is supported.

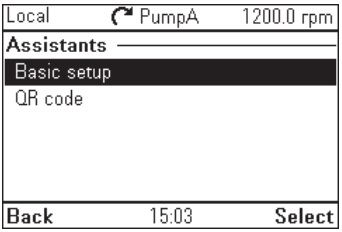
Resetting counters

Counters are parameters that measure incremental quantities associated with the use of the drive such as runtime or energy consumption. Counters are updated automatically and cannot be edited, but it is possible to reset a counter to zero by pressing down (**Reset**) for three seconds.

Note: If a trigger value is defined for the counter, the counter's progress from zero to the trigger value is shown as a bar graph.

Assistants

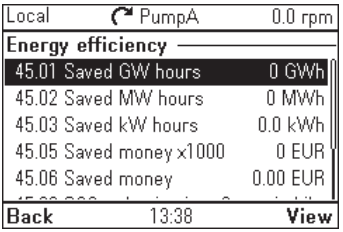
In the **Assistants** menu, you can launch an assistant. An assistant is a sequence of steps that help you to complete a task, such as setting up the control panel to use with the drive and the motor, or fixing a fault.



1. Use ▲ and ▼ to highlight the desired assistant.
2. Press (**Select**).
3. Follow the instructions on the screen to complete the task defined by the assistant:
   - Use ▲ and ▼ to select settings.
   - To edit a setting, press (**Edit** or **Select**).
   - Use ▶ and ◀ to move between the pages of the assistant. The progress bar on the upper right corner of the screen indicates the progress.
   - To exit the assistant, press (**Exit**).

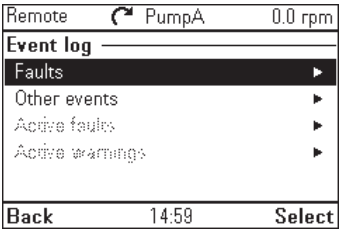
Most settings accessed in assistant steps can also be accessed through the main **Menu** or the **Parameters** menu, but in the assistants they are presented in a more user-friendly fashion.

Energy efficiency



In the **Energy efficiency** menu, you can view and configure parameters related to energy savings, such as kWh counters.

Event log

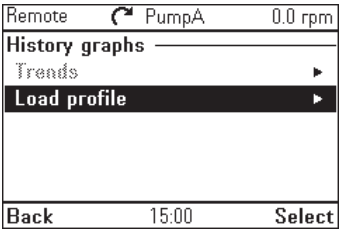


In the **Event log** menu, you can view information collected on faults and warnings. Events are automatically logged. See *Fault tracing* (page *59*) for more information on faults and warnings.

- **Faults** sub-menu displays the faults that are tripped the drive.
- **Other events** sub-menu displays all other faults, and warnings and their details.
- **Active faults** and **Active warnings** sub-menu displays the faults and warnings which are active.

History graphs

The History graphs menu contains Trends and Load profile sub-menu.

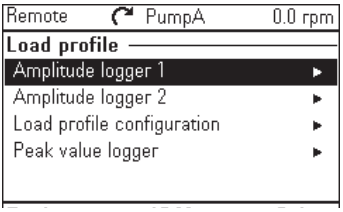


Trends

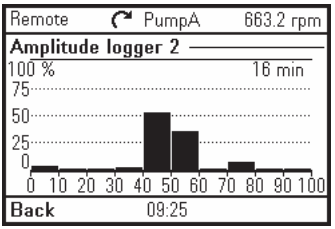
This functionality is available in a future release.

Load profile

In the **Load profile** submenu, you can view and configure load profiles. The menu contains the following sub-menus:



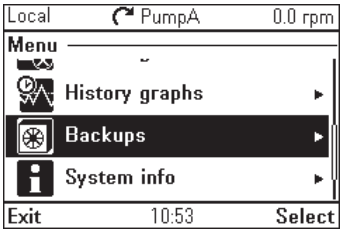
- **Amplitude logger 1**: Opens a Histogram view, which displays the motor current as a distribution histogram. This logger cannot be reset.
- **Amplitude logger 2**: Opens a Histogram view, which displays the contents of an amplitude logger as a distribution histogram. You can select the signal to be monitored.
- **Load profile configuration**: Select the signal to be monitored in Amplitude logger 2.
- **Peak value logger**: Select a signal to be monitored by a peak value logger.



For more information on load profiles, see the appropriate firmware manual.

Backups

In the **Backups** menu, you can save parameter settings in the control panel memory and restore parameter settings from a backup to the drive. You can store up to two backup files on the control panel.



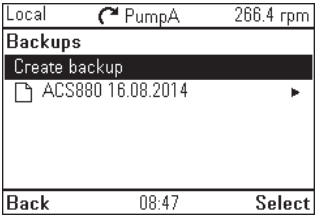
The assistant panel has a dedicated space for one automatic backup. An automatic backup is created two hours after the last parameter change. After completing the backup, the panel waits for 24 hours before checking if there are additional parameter changes. If there are, it creates a new backup overwriting the previous one.

You can copy backup files to and from a PC with any file manager application (example, Windows Explorer).

Some of the Backup icons are listed below:

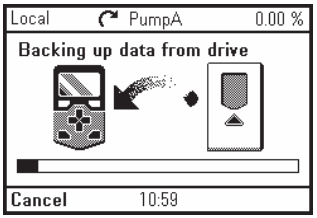
Backup	Icon
Automatic backup	
Compatible backup	
Incompatible backup	
Partly compatible	

Creating a parameter backup



1. In the **Backups** menu, select **Create backup**.

   If there is a free backup slot in the control panel, the following step is skipped.
2. Use ▲ and ▼ to select one of the existing backup files, and press **Replace**.
3. Wait until the backup is completed. An animation is shown on the control panel during the backup process. The control panel automatically returns to the **Backups** menu.



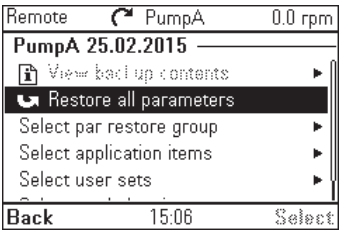
Note: If the backup process is canceled or interrupted, the previously saved backup file is not deleted or damaged. Thus, if you accidentally start a backup process, you can safely cancel it before its completion.

Restoring a parameter backup

1. In the **Backups** menu, select the backup file you want to restore.
2. Select **View backup contents** and check that it is the correct backup file and that it is suitable for restoring.

Note: This functionality is available in a future release.

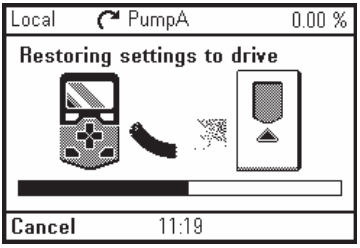
3. Select one of the restore options:



   - To restore all settings, select **Restore all parameters**.
   - To restore a set of parameters, select **Select par restore group** and select the desired parameters from the list, and then select **Restore**.
   - To select application parameters, select **Select application items** and select the desired parameters from the list and then select **Restore**.
   - To select user parameters sets, select **Select user sets** and select the desired user set from the list and then select restore.

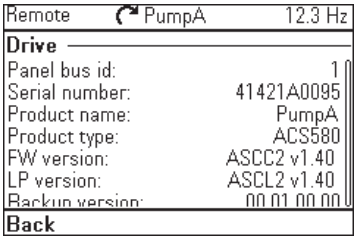
- To select production data items, select **Select prod. data items** and select the desired production data and then select restore.

4. Wait until the restore is completed. An animation is shown on the control panel during the restoring process.The control panel automatically returns to the **Backups** menu.



System info

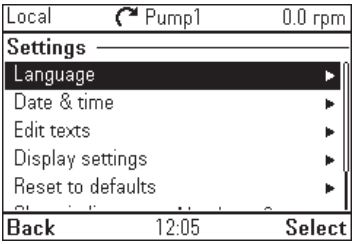
In the **System info** menu, you can view information on the drive and the control panel.



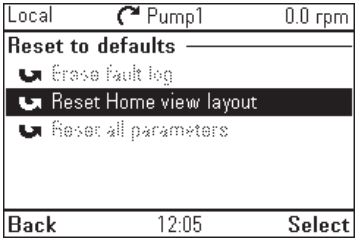
- **Drive** and **Control panel**: Shows information on the selected component, such as firmware version, serial number, type code, device ID number or date of manufacture. The content of the view varies between different drive types.
- **Licenses**: Shows the license information of the application program.

Settings

The **Settings** menu has the following sub-menus:

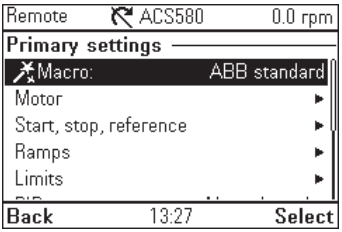


- **Language**: You can select different language in the control panel.
- **Date & time**: You can set the date and time, and select their display settings and whether the control panel automatically adjusts the time for daylight savings changes. The time and date display setting determines how time stamps are formatted.
- **Edit texts**: You can customize editable user interface texts, such as the drive name.
- **Display settings**: You can set backlight power save on/off and adjust display contrast and brightness.



- **Reset to defaults:** You can reset Settings into their default values.
  - **Erase fault log:** This functionality is available in a future release.
  - **Reset Home view layout:** Default Home view settings are restored.
  - **Reset all parameters:** This functionality is available in a future release.
- **Show in lists:** Show or hide the numeric IDs of:
  - parameters and groups
  - option list items
  - bits
  - devices in **Options** > **Select drive**.
- **Pass code:** Pass codes can be entered into this parameter to activate further access levels (for example additional parameters).

Primary settings

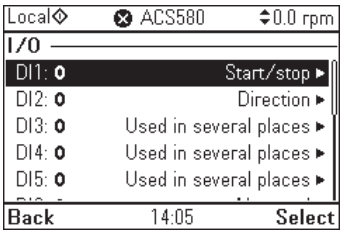


The **Primary settings** menu has the following sub-menus:

- **Macro:** Setup drive control and reference source by selecting from a set of predefined wiring configurations.
- **Motor:** Adjust motor-related settings, such as control mode, nominal values, ID run or thermal protection. Note that the settings that are visible depend on other selections, for example vector or scalar control mode, used motor type or selected start mode.
- **Start, stop, reference:** Set up start/stop commands, reference, and related features, such as constant speeds or run permissions.
- **Ramps:** Set up acceleration and deceleration settings.
- **Limits:** Set the allowed operating range. This function is intended to protect the motor, connected hardware and mechanics. The drive stays within these limits, no matter what reference value it gets.
- **PID:** Set up the settings and actual values for the process PID controller. PID is only used in remote control.
- **Fieldbus:** To make the protocol configurations easier.
- **Advanced options:** Contains settings for advanced functions, such as triggering or resetting faults through I/O, or switching between entire set of settings.

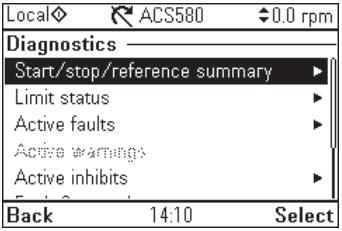
- **Clock, region, display:** Contains settings for language, date and time, display (such as brightness) and settings for changing how information is displayed on screen.
- **Reset to defaults:** Enables you to reset the Home view to its original factory state.

I/O



In the **I/O** menu, each row provides terminal name, number, electrical status and logical meaning of the drive. Each row also provides a sub-menu that provides further information on the menu item and allow you to make changes to the I/O connections.

Diagnostics



The **Diagnostics** menu provides you with diagnostic information, such as faults and warnings and helps you to resolve potential problems. Use the menu to make sure that the drive setup is functioning correctly.

- **Start, stop, reference, summary:** This view shows where the drive is currently taking its start, stop commands and reference. The view is updated in real time. If the drive is not starting or stopping as expected, or runs at undesired speed, use this view to find out where the control comes from.
- **Limit status:** Describes any limits currently affecting operation. If the drive is running at undesired speed, use this view to find out if any limitations are active.
- **Active faults:** Shows the currently active faults and provides instructions on how to fix and reset.
- **Active warnings:** Shows the currently active warnings and provides instructions on how to fix and reset.
- **Fault & event log:** Lists the faults, warnings and other events that have occurred in the drive.
- **Fieldbus:** Provides status information and sent and received data from fieldbus for troubleshooting.
- **Load profile:** Provides status information of load distribution (that is, drive running time spent on each load level) and peak load levels.

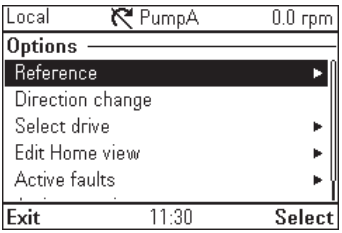
6

Functions in the Options menu

What this chapter contains

The chapter describes functions in the **Options** menu.

Options menu



In the **Options** menu, you can control the settings related to the **Home** view.

The **Options** menu has the following sub-menus:

- **Reference**: Set the reference value by using ▲ and ▼. The changes take place when you save them with a key press ⏎. See *Setting the reference* (page *52*).
- **Direction change**: Change the direction of the motor's rotation in local control mode.
- **Select drive**: Enable or disable the panel bus. If enabled, view the status of drives in the panel bus and select which drive to control with the control panel. See chapter *Control of multiple drives* (page *55*).
- **Edit Home view**: Edit the contents of the **Home** view. See *Editing the contents of the Home view* (page *52*).
- **Active faults:** View an active faults. See chapter *Fault tracing* (page *59*).
- **Active warnings:** View an active warnings. See chapter *Fault tracing* (page *59*).

Setting the reference

You can change the reference when the drive is in the local control mode. You can also change the reference in remote control mode if the drive configuration permits it. Changes take effect when saved with a key press.

1. Press Loc/Rem to switch to the local control mode, if the text in the top left corner of the display reads **Remote**.
2. In the **Options** menu, select **Reference**.
3. Change the reference by using the following keys:
   - Use ◄ or ► to select a digit to edit.
   - Use ▲ and ▼ to change the value of the selected digit.
4. Press (**Save**) to save the reference value, or (**Cancel**) to discard the changes. The control panel returns to the **Home** view.

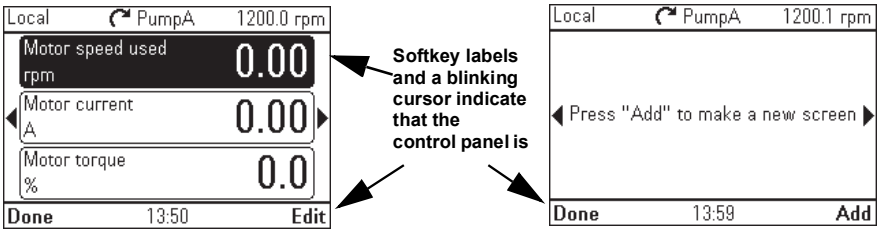
Tip: To adjust the reference from the **Home** view, press ▲ or ▼ and the reference changes immediately. The reference value is highlighted when you are changing it. If you hold down the arrow key, the rate at which the value changes accelerates.

Editing the contents of the Home view

1. In the **Options** menu, select **Edit Home view**. This opens the **Home** view in the editing mode.
2. In the editing mode, you can add, edit and delete the displayed parameters.

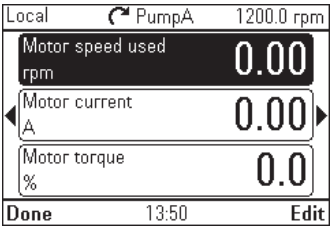
   After editing the contents, press (**Done**) to confirm the changes and to exit the editing mode and return to the **Home** view.

Two-signal page in editing mode ***Empty page in editing mode***

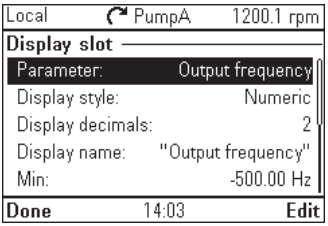


3. In the editing mode, use ◄ and ► to move between the different pages of the **Home** view.
   - To add a new page, navigate to the page that reads Press **Add** to make a new screen.
   - To edit, add or delete parameters on an existing page, navigate to that page.

4. Use ▲ and ▼ to move the cursor highlight.
   - To add a new parameter to an existing page, highlight an area above, between or below an existing parameter.
   - To edit or remove an existing parameter, highlight that parameter.



5. Press ⟵ (**Edit**) to open the **Display Slot** menu.
6. Choose a parameter, its display settings and scaling.

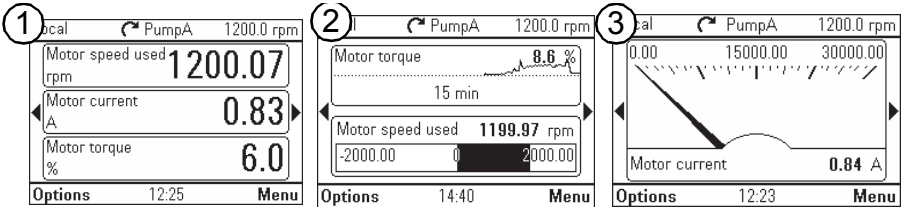


Note: Parameters whose values have textual representations (such as the names of bit states) or contain characters other than numbers (such as dates or durations) are automatically displayed as text. For these parameters, Display style and selections pertaining to numeric parameters are not available.

- **Parameter**: Select the parameter to show in the selected slot. The most commonly used parameters are listed as presets.

  For bit field parameters, you can select either a single bit or the full bit field to add to the **Home** view. With individual bits, the bit state is displayed. Full bit fields are shown in either hexadecimal or binary format.

  Note: If **Empty** is selected, the parameter is removed from the **Home** view.
- **Display style**: Select how the signal values are displayed. It is possible to use different display types on the same page.
  - **Numeric**: The parameter values are displayed as numbers (see figure 1 below). If there is only one parameter on the page, a bar graph is also displayed.
  - **Gauge/bar**: When there is one parameter on the page, the parameter value is shown as a dial gauge (see picture 3 below). When there are two or three parameters on the same page, the value is displayed as a bar graph (see the slots in figure 2 below).
  - **Graph** 15 minutes, 30 minutes, 1 hour or 24 hours: The parameter value is displayed as a graph within the selected time frame (see the bottom slot in picture 2).



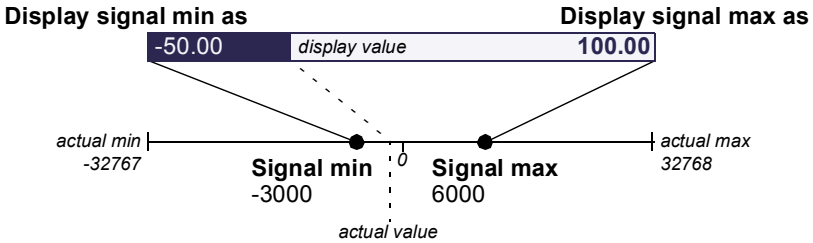
Note: The data shown in the graph is not stored in the drive memory, that is, if you remove or restart the control panel, the data is lost.

- **Display decimals**: Specifies how many decimals are shown.
- **Display name**: Enter a custom label to show in the **Home** view instead of the parameter name.
- **Min** and **Max**: This function depends whether **Scale value range** is selected or not:
  - **Scale value range** not selected: Select the minimum and maximum signal values that are shown on graph displays.
  - **Scale value range** selected: Select the actual values of the parameter that correspond to **Display min as** and **Display max as** (see below).
- **Scale value range:** Select if you want to specify the value range.
  - **Display min as** and **Display max as:** Select the minimum and maximum values shown in the **Home** view.

    This feature allows application-specific scaling to be applied.

    If the parameter value is below the minimum or above the maximum, the text *Off the scale* is displayed. In the graph format, small arrows are shown instead to indicate values off the scale.

Scaling with Display signal min/max as and Signal min/max



- **Display unit:** Customize the unit shown in **Home** view when scaling is used.

7

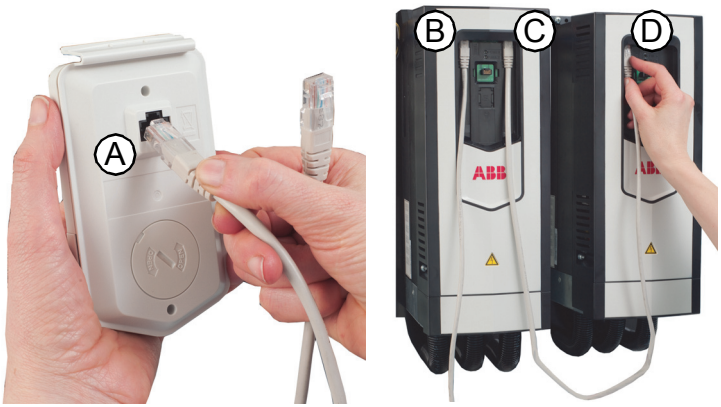
Control of multiple drives

What this chapter contains

The chapter describes how to control several drives with one control panel.

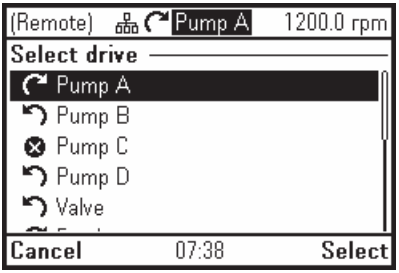
Connecting multiple drives to a control panel

1. Connect the control panel (A) to the first drive (B) in the panel bus.
2. Connect the first drive (C) to the second (D), the second to the third, and so on, by daisy chaining RJ-45 leads.



This picture shows a panel bus example with ACS880-01 drives.

Selecting drive menu



In the **Options** menu, select **Select drive** which lists all the drives connected to the panel bus and shows their current status. If panel bus is not enabled, only one drive is shown.

In the panel bus, If the connection to the currently selected drive fails, **Select drive** menu is shown with the other drive list.

In the **Select drive** menu, any drives to which the connection is lost are shown in dimmed text.

Selecting a drive

If there are multiple drives connected to the same panel bus, you can select which drive to control with the control panel.

1. In the **Options** menu, select **Select drive** to open a list of connected drives.
2. Use ▲ and ▼ to move the cursor. When a drive is highlighted, the green LED on the drive blinks for one second.
3. Press ⏎ (**Select**) to change control to the highlighted drive.

Panel features with multiple drives

Panel views

In a panel bus configuration, the control panel communicates with one drive at a time. Any information shown on the control panel, such as the status bar or signals in the **Home** view pertain to the currently selected drive. Similarly, the control panel stores data to its memory only from the currently selected drive.

Changes to the **Home** view configuration and any parameter changes are saved in the drive. They can be transferred to other drives using the backup feature.

You can view information on other drives in the panel bus and switch to another drive in the **Select drive** menu.

The Help page

The content of the Help page is drive-specific, and it always refers to the currently selected drive.

Graph data

The data for the graph format in the **Home** view is stored in the control panel only for the selected drive. Upon changing the selected drive, any stored graph data is discarded, and graph data collection begins for the new drive.

History graphs and all related settings (signal selection, horizontal timescale) are saved in the drive, and the **History graphs** menu shows always the graphs for the currently selected drive. Data collection takes places independently in each drive.

Backups

The control panel can store backups from different drives. Conversely, backups from a drive can be uploaded to another drive.

Customized content

Each drive in the panel bus has its own custom content because all the customizations are stored in the drive.

Assistants

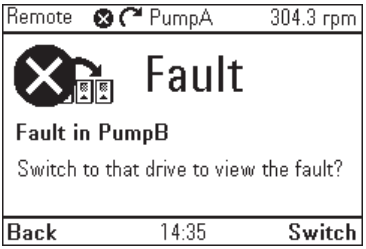
Assistants are drive-specific, which means that different drives in the panel bus can have different assistants. However, the assistant framework is the same for all assistants in all drives.

Faults and warnings with multiple drives

Faults and warnings in the currently selected drive

Faults and warnings in the currently selected drive are shown as normal.

Faults and warnings in other drives



Faults in the other drives in the panel bus appear as remote faults.

Faults that require a restart look like any other remote faults. They are shown normally if you switch to the drive in which the fault has occurred.

In the **Fault** view, the keys have the following functions:

- Press (**Hide**) to go back to the previous view. The fault view does not reappear as with regular faults.
- Press (**Switch**) to connect to the faulted drive.

Only active warnings in the selected drive are shown in the control panel. To view warnings in another drive, you must select that drive in the **Select drive** menu.

8

Fault tracing

What this chapter contains

This chapter describes how to identify different fault and warning messages that are shown on the control panel and how to solve problem situations.

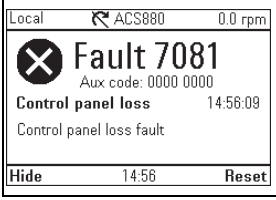
Identifying error and warning messages

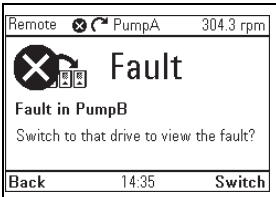
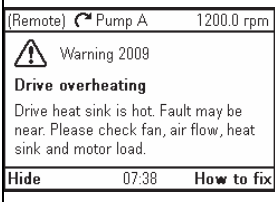
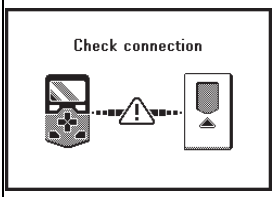
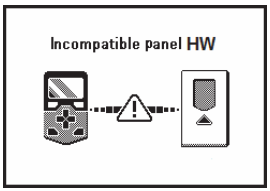
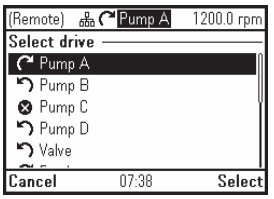
Faults and warnings are drive states that occur when the drive detects a problem in its operation. The display message, backlight and LED indications help you to identify the problem.

Some of the fault and warning icons and their descriptions are mentioned below.

Event	Icon
Fault activate	
Fault reset	
Warning activate	
Warning deactivate	
Pure event activate	
Pure event deactivate	

Refer to the table below to identify faults and warnings.

Display	LED	Type
	continuous red	See *Faults* (page *61*).
	blinking red	Faults of this type require stopping and restarting the drive before it continues to function normally. See *Faults* (page *61*).

	continuous red	A fault has occurred in another drive in the panel bus.
Display	**LED**	**Type**
	blinking green	See *Warnings* (page *61*).
	continuous green	The connection between the control panel and the drive is faulty. Check that the connection cable is properly attached.
	continuous green	The control panel type is not compatible with the drive you attempt to use it with. See *Compatibility* (page *17*).
	continuous green	The connection between the control panel and the drive has been lost. Check the control panel network connections. Select another drive.

Faults

Faults are problems that require your attention before you start the drive again.

Refer the following steps to solve the fault situation:

1. Identify and eliminate the cause of the fault. In the **Fault** view, you can see the fault code. Refer to the relevant firmware manual for more information on the fault.
2. Reset the fault by pressing (**Reset**) in the **Fault** view.

In the **Fault** view, the keys have the following functions:

- Press (**Hide**) or any of the arrow keys to temporarily hide the fault and go back to the previous view. If there is also an active warning, it is displayed instead. The fault view reappears after 60 seconds if no keys have been pressed.
- Press (**Reset**) to reset the fault and return to the previous view.
- Press the ? key to open the context-sensitive help. The help page has a shortcut to the Fault Diagnostics Assistant which helps you solve the fault situation.

Warnings

Warnings mean that a possible problem has been detected and may need attention, and the drive can still run. A warning message disappears once the condition that triggered it goes away.

- Press (**Hide**) to hide the warning message and go back to the previous view. If the warning is still active after 60 seconds of no key presses, the **Warning** view reappears automatically.
- Press the ? key to open the context-sensitive help.

Note: If multiple warnings are active, the total number of active warnings is displayed. Use ▲ and ▼ to scroll through the warnings.

9

Service and maintenance

What this chapter contains

This chapter describes the service and maintenance tasks of the Assistant control panel.

Removing the control panel cover

It is possible to remove the control panel cover to clean any dust inside the cover or to change the cover to customize the control panel.

The cover consists of two parts, both of which can be removed. You do not need tools to remove the covers.

1. Open the USB connector cover.
2. Remove the lower part of the control panel cover.
3. Remove the upper part of the cover.

Reinstall the covers in the reverse order.

Replacing the battery

The instructions below describe how to replace the battery that powers the real-time clock of the control panel.

1. Turn the lid on the back of the control panel counter-clockwise until the lid opens.
2. Replace the battery.
3. Put the lid back and tighten it by turning it clockwise.

Control panel software updates

If the control panel software needs to be updated, contact ABB.

10

Panel-to-PC USB connection

What this chapter contains

This chapter describes the USB connection between the Assistant control panel and a PC.

USB connection

The two main functions of the USB connection are:

- The control panel acts as an USB adapter, allowing the PC tool to interact with the drive. See *Connecting a PC tool to a drive through the control panel* (page 67).
- It is possible to transfer data (for example, screenshots and backups) between the control panel and the PC. When connected, the control panel appears as an MTP device on the PC.

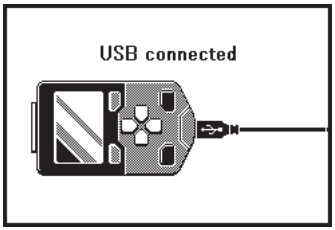
Connecting control panel to PC USB

Note: When connected to a PC, the control panel displays the USB screen and does not respond to key presses. In this mode, you can only interact with the control panel or the drive through the PC tool.

To connect the control panel to a PC,

1. Open the lid of the USB connector.
2. Plug in a USB cable.
3. Connect to a PC.

The control panel displays the USB screen.



Connecting a PC tool to a drive through the control panel

You can use the control panel to connect an ABB PC tool to the drive. When using the control panel, you can only access the drive from the PC tool.

1. Install an ABB PC tool to the PC.
2. Connect the control panel to the drive.
3. Connect the control panel to the PC with a USB cable as instructed in *Connecting control panel to PC USB* (page *66*).
4. If Windows prompts you to install USB drivers, install them as instructed in *Drive composer user's manual* (3AUA0000094606 [English]).

The behavior depends on the current control location of the drive. See *Connecting in local control mode* (page *67*) and *Connecting in remote control mode* (page *67*).

Connecting in local control mode

When you connect the control panel in local control mode to a PC, local control is transferred to the PC tool and the control panel displays the USB screen. The drive retains its present reference and direction.

When you have finished using the PC tool, close the connection through the PC tool first and then disconnect the USB cable. Local control is transferred back to the control panel and the drive retains its present reference and direction.

Note: If you disconnect the USB cable before closing the connection, a Local loss fault is triggered.

Connecting in remote control mode

When you connect the control panel in remote control mode to a PC, the control panel displays the USB screen and you can only interact with the control panel through the PC tool. The drive remains in remote control, but you can switch over to local control using the PC tool.

When you disconnect the PC tool, the control panel exits the USB screen and the drive resumes its normal operation.

Transferring files between the control panel and a PC

1. Connect the control panel to a PC with a USB cable as instructed in *Connecting control panel to PC USB* (page 66).
2. If Windows prompts you to install USB drivers, install them as instructed in *Drive composer user's manual* (3AUA0000094606 [English]).

The control panel appears as an MTP device in Windows Explorer.

3. Open **ABB Drives Assistant control panel** with Windows Explorer, and go to the directory where the files are stored.

- Screenshots are stored in: ABB Drives Assistant control panel\ABB Drives Assistant control panel_a\screen
- Backup files are stored in: ABB Drives Assistant control panel\ABB Drives Assistant control panel_a\backup

You can copy files to and from the folders just like any other files with Windows Explorer.

11

Technical data

What this chapter contains

This chapter contains the technical details of the Assistant control panel.

Connectors

The control panel has the following connectors:

- RJ-45 female connector. If a cable is used for the drive connection, the maximum length is 100 meters (328 ft.). On a panel bus, the combined maximum length of the panel bus cables is 100 m (328 ft.).
- Type B mini USB connector for connecting the panel to a PC (USB 2.0, MTP protocol). The maximum cable length is three meters (9.8 ft.).

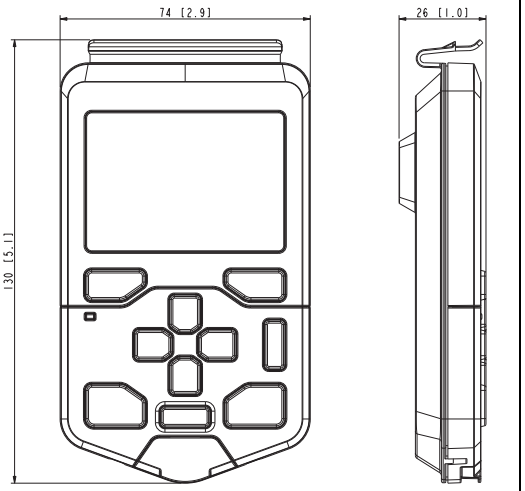
Display

The control panel has a monochrome, 240 x 160 pixel resolution LCD display with a white backlight.

Battery

At an ambient temperature of 25 °C (77 °F), the change interval of the real-time clock battery is approximately 10 years.

Dimensions and weight

Weight	130 g		
Height, width and depth mm [in.]			

Degrees of protection

Degree of protection, attached to a drive	IP55
Separately	IP20

Materials

Enclosure	PCB/ABS
Packaging	Cardboard
Screen	Polycarbonate
Disposal	Do not dispose the control panel with municipal waste. Check local regulations for disposal of electronic products.

Environmental limits

	Operation	*Storage*	*Transportation*
Installation site altitude	4000 m (13123 ft.)	-	-
Air temperature	-20 °C to +55 °C (-4 °F to 131 °F)	-40 °C to +70 °C (-40 °F to 158 °F)	-40 °C to +70 °C (-40 °F to 158 °F)
Relative humidity	95% (non-condensing)		
Contamination levels (IEC 60721-3-3, IEC 60721-3-2, IEC 60721-1-3-1)	3C3		

	Operation	*Storage*	*Transportation*
Sinusoidal vibration	61800-5-1 ed 2. EN 60082-2-6 test Fc (1g)		class 2M3 in acc. with EN 60082-2-6
Shock	class 3M4 in acc. with EN 60062-2-27		class 2M2 in acc. with EN 60082-2-27
Free fall	IEC-60068-2-32, drop height 1 m. (3.3 ft.)		
EMC compliance (EN 61800-3: 2004)	IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-6		

Bluetooth interface

Bluetooth standard	Bluetooth 4.0 Duel mode (smart ready)

Further information

Product and service inquiries

Address any inquiries about the product to your local ABB representative, quoting the type designation and serial number of the unit in question. A listing of ABB sales, support and service contacts can be found by navigating to www.abb.com/searchchannels.

Product training

For information on ABB product training, navigate to www.abb.com/drives and select *Training courses*.

Providing feedback on ABB Drives manuals

Your comments on our manuals are welcome. Go to www.abb.com/drives and select *Document Library – Manuals feedback form (LV AC drives)*.

Document library on the Internet

You can find manuals and other product documents in PDF format on the Internet at www.abb.com/drives/documents.

Contact us

www.abb.com/drives
www.abb.com/drivespartners

3AUA0000085685 Rev C EN 2015-04-27

Power and productivity
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